Section 7. Ambient Air Quality Monitoring Quality System Strategy

A re-thinking of the processes of ensuring acceptable data quality must accompany the overall re-thinking of the monitoring processes. This section will address a strategy for the review and, if necessary, redevelopment of a quality system that is germane, flexible where necessary, and responsive to changes in the monitoring program. A QA Strategy Workgroup has been engaged in this process since 2000. The QA Strategy Document (www.epa.gov/ttn/amtic/geninfo.html) and its subsequent summary provide the detail of what the Workgroup considered the primary activities and goals for a three-year period. This section will provide a status of accomplishments to date, address future activities and the means to get there.

7.1 The Quality System

A quality system is defined as a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, and implementation plan of an organization for ensuring quality in its work processes, products, and services. The quality system provides the framework for planning, implementing, assessing, and reporting worked performed by the organization and for carrying out required QA and quality control (QC). The primary requirements or elements for the Ambient Air Monitoring Program quality system will be described in 40 CFR Part 58 Appendix A and in guidance format in the QA Handbook for Air Pollution Measurement System Volume II. These elements are identified in Table 7-1.

Table 7-1 QA Element and Activity List

Quality System Elements	Activities
Planning	▸ Data Quality Objectives ▸ Performance Based Measurement Approach ▸ Regulation Development ▸ Graded approach to QA - QMPs/ QAPPs and SOPs ▸ Guidance Documents
Implementation	▸ Training ▸ Internal Quality Control Activities ▸ Data verification/validation ▸ Data Certification
Assessment/ Reporting	▸ Site Characterizations ▸ Performance Evaluations (NPAP, PEP, Region/SLT Performance audits) ▸ Assessment of Quality Systems & Technical Systems Audits ▸ Data Quality Assessments ▸ QA Reports

7.2 Planning Activities

7.2.1 Development of Data Quality Objectives

The DQO Process provides a general framework for ensuring that the data collected by EPA meets the needs of decision makers and data users. The process establishes the link between the specific end use(s) of the data with the data collection process which in turn identifies the quality and quantity of data needed to meet a program's goals The result of the DQO process is a series of data quality indicators (e.g., precision, bias, completeness, detectability) and acceptance requirements (called measurement quality objectives) for those indicators.

OAQPS will be responsible for developing DQOs for federally mandated data collection efforts such as the NCore Level 2 objectives and for the traditional NAAQS (NCore Level 3) comparisons. DQOs for other data collection activities (i.e., DQOs for non-trends speciation sites) would be the responsibility of the SLTs using the graded approach to QA described later in this section. DQOs will be developed based upon resource availability and priorities set by the NMSC, but would be expected to be completed in a two-year period, or at least prior to full implementation of an NCore Level 2 or 3 pollutant. $PM_{2.5}$ and ozone DQOs have already been developed. The precision and bias data quality indicators for these two pollutants have been included in 40 CFR Part 58 Appendix A. As DQO's are completed, they would be added to the CFR.

7.2.2. Move towards a Performance-Based Measurement Process (PBMS) Philosophy

A performance-based measurement process should be the primary tool for selection or identification of appropriate methods for ambient air monitoring. The philosophy behind PBMS is to determine "what" is needed and not "how" to do it. PBMS is a set of processes wherein the data quality needs, mandates or limitations of a program or project are specified and serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner. PBMS can be achieved by developing data quality objectives (DQOs) early in the planning process. DQOs would then set the stage for the development of federal reference method acceptance criteria (where needed). As an example, the DQOs developed for $PM_{2.5}$ are now being used to determine the "acceptability" of continuous $PM_{2.5}$ monitors. Using a PBMS will put a greater importance of the identification of appropriate data quality indicators and measurement quality objectives and insuring that these are consistently defined and measured in order to provide for an assessment of data comparability.

a. PBMS for NAAQS comparison objectives. Due to the regulatory requirements for NAAQS comparisons, instruments used for this purpose will continue to meet the performance specifications of the Federal Reference and Equivalency Method criteria.

b. PBMS for NCore Level 2 objectives. Monitoring instruments used for the NCore Level 2 objectives that do not serve a dual purpose for comparison to the NAAQS do not

necessarily need to meet FRM/FEM criteria but must meet the minimum data quality requirements developed through the DQO process that will be defined in CFR and guidance.

c. PBMS for other non-Federal objectives. SLTs will be responsible for selecting methods that will meet their data quality requirements for monitoring. The performance-based approach lends itself to flexibility but will put more responsibility on the SLTs for developing quality systems that meet their needs. Therefore, there will be a greater importance and emphasis on QA project plan (QAPP) development.

d. Data identification in AQS. Since the data quality requirements for NAAQS comparisons, NCore Level 2 and non-Federal objectives may not be the same, the data will have to be identified in AQS so it is appropriately used. Table 7-2 provides a partial list of the monitor types will be identified in AQS.

Table 7-2 Monitor Types

Monitor Type	Comments
NAAQS	Data that can be used for NAAQS - This would replace SLAMS/NAMS monitor types
NCORE2	Data that can be used for NCore Level 2 objectives
NAACOR2	Data that can be used for NAAQS and NCore Level 2 objectives (must be an FRM)
SPM	non-Federal objectives (special purpose monitoring). This type is already listed in AQS

7.2.3 Regulation Development

The QA Strategy Workgroup reviewed 40 CFR Part 58 Appendix A in order to determine what remained relevant to the Ambient Air Quality Monitoring Program quality system. In addition to restructuring this Appendix for readability, a number of changes were made:

- **Combined PSD (APP B) into APP A**. Appendix A and B are very similar and it was felt these two sections could be combined.

- **QMP- and QAPP approval.** Provides more explanatory information on quality management plans (QMPs) and QAPPs and mentions that allowance of QAPP approval at monitoring agency level as long as described and approved in QMP.

- **DQOs.** OAQPS responsibility to provide DQOs for Level 2 and NAAQS objectives.

- **Graded approach to QA.** Described this process in CFR in order to provide flexibility. A paper on this approach is available on AMTIC at www.epa.gov/ttn/amtic/geninfo.html.

- **Quality assurance lead.** Provides for monitoring organizations to designate a quality assurance lead with certain QA responsibilities. A paper on this approach is available on AMTIC at www.epa.gov/ttn/amtic/geninfo.html .

- **Reporting organization and primary quality assurance organization**. Defines these two terms in order to clarify the organization primarily responsible for the quality of the data. An additional field in AQS may be necessary to accommodate this change.

- **SO_2 and NO_2 manual audit checks** (formally 3.4.2 and 3.4.3)- Removed these sections.

- **Biweekly precision check concentration range**- changed the ranges to allow for lower concentration checks to be acceptable in cases where the majority of the data from a site are below the current range requirements.

- **Changed PM_{10} collocation requirement** to 15% of routine sites; similar to $PM_{2.5}$

- **Provide for quarterly data certifications.** Due to the emphasis on real-time reporting, data quality validation and evaluation is occurring earlier in the monitoring process than in the past. In addition, the QA Reports distributed by OAQPS (i.e., CY99 and CY00 $PM_{2.5}$ QA Reports) have limited usefulness because the data are not evaluated until after it is officially certified, typically 6 months after the calendar year in which it was collected. Certifications could occur sooner and a proposal for quarterly certifications is being considered.

- **Revised Automated Precision and Bias Statistics** - Changed statistics used to estimate precision and bias and will calculate them on a site basis as opposed to a reporting organization basis. The paper on this approach has been published for review.

These changes will be incorporated into a CFR package. A draft is expected to be completed in 2004 which will then go through the public comment process.

7.2.4 Using a Graded Approach to QA

As with any EPA funded activity, EPA QA Policy requires monitoring organizations to develop QMPs and QAPPs. Under the Strategy, the use of air monitoring data will have multiple applications. Therefore, some monitoring objectives may not call for quality systems and quality assurance documentation (i.e., QAPPS) to meet the stringent requirements for NAAQS comparison purposes but may have differing data quality needs based on their specific objectives. The revised EPA QA Policy allows for a graded approach to quality assurance. This approach allows for some flexibility in the development of QMPs, QAPPs and DQOs. The QA Strategy Workgroup developed a graded approach for the Ambient Air Monitoring Program. This approach has gained acceptance by the Workgroup and over FY 2004 will be reviewed with

the intent on approval by the EPA Regional Offices who are required to review and approve QMPs and QAPPs. The graded approach is available on AMTIC at www.epa.gov/ttn/amtic/geninfo.html.

7.2.5 Guidance Documents

OAQPS will continue to develop guidance documents relevant to federally implemented monitoring programs. Within the next few years, guidance will be revised or developed for:

a. The QA handbook. The primary guidance document for the Ambient Air Quality Monitoring Program Quality System will continue to be the QA Handbook for Air Pollution Measurement Systems Volume II Part 1. This document went through a revision 1998. It was suggested at that time that this document be revised on a 5-year interval which means it is due for an update. Since OAQPS is in the process of revising its regulations, the Handbook will be updated to reflect these changes in FY04 and is expected to be completed in FY05. It is expected that QA requirements for the National Air Toxics Trends Program (NATTS) and for a coarse particulate program ($PM_{10-2.5}$) would be included in the next revision. Part 2 of the Handbook is used for the reference and equivalent methods and will also be used for generic technical guidance for other pollutant monitoring procedures used at NCore Level 2 and 3 sites.

b. Generic QAPP. Using the EPA Quality Staff QAPP guidance, OAQPS, in cooperation with the Institute of Tribal Environmental Professionals (ITEP), is in the process of planning for the development of a generic ambient air monitoring QAPP software product that would allow the SLTs to input the appropriate QA information into each section of their QAPP for their particular monitoring program. In FY 03 OAQPS received 50K of Tribal initiative funds to start development of this software product. It is anticipated that additional funds may be needed to augment the imitative funds for completion of this software.

7.3 Implementation Activities

7.3.1 Training

Section 11 contains additional details on training for QA. Implementation items related to training are as follow.

a. Develop quality assurance lead "Certification/Accreditation" program. One way to place more emphasis on training is to establish a national accreditation process to certify QA personnel. The QA Workgroup initially described a number of categories in which accreditation or certification would be useful. At a minimum, OAQPS will pursue the development of an accreditation process for the Quality Assurance Lead which is now defined in 40 CFR Part 58 Appendix A. This accreditation process would foster a level of consistency across the nation, but will not be mandatory. Effective April 23, 2003, the EPA Quality Staff meets the criteria for certification established by the Certified Provider Commission of the International Association for Continuing Education and Training (IACET) and is authorized to issue Continuing Education Units (CEUs) when EPA Quality Staff conduct the EPA Quality

Systems training courses. The QA Strategy Workgroup will develop a Quality Assurance Lead accreditation curriculum using the Quality Staff courses and the courses provided by the Air Pollution Training Institute (APTI). This curriculum will be completed by the end of calendar year 2004. A number of training related activities will be instituted:

- **Re-training** - If capital expenditures are made on automating QC activities, personnel normally performing these activities will need to be trained for alternate activities. It is suggested that more emphasis be placed on data assessments both related to QA, monitoring data and network assessments.

- **Conduct a poll for training-** It is suggested that a poll of SLTs be conducted to determine what QA related training is needed. It is suggested that STAPPA/ALAPCO could help develop/implement this poll.

- **Training at the annual QA conference -** Since 2001, OAQPS has facilitated two days of presentations and training at the annual EPA National Conference on Managing Environmental Quality Systems. Approximately 30 SLT representatives attended the first two ambient air monitoring sessions. This conference provides training on a number of courses that will be required for quality assurance lead certification mentioned above and ambient air monitoring QA related course (e.g.,APTI courses) could also be taught at the National Conference. SLT QA leads should be provided opportunities to attend this meeting.

- **Develop web-based training programs** - Based upon priority training needs, OAQPS will pursue the use of web-based training courses particularly the APTI courses and a training module related to the QA Handbook for Air Pollution Measurement Systems Volume II Part 1.

7.3.2 Internal Quality Control Activities

The majority of the day-to-day QA activities at the SLT monitoring organizations involve implementing or assessing quality control information, whether it be zero/span checks, collocated precision, or field, trip or lab blanks. Each monitoring method has required and suggested quality control samples that can be used to assess data quality of a phase (i.e., sampling) of the measurement system or the total measurement system. These QC checks will be included in validation templates that will be developed for each NCore Level 2 and 3 measurements.

Accordingly, the performance-based measurement system principal will be used to develop the necessary quality control samples in the regulations without mandating frequency and acceptance criteria. The CFR should identify the types of QC samples that will provide assessments of attaining the DQOs. As can be shown with the $PM_{2.5}$ DQO software tool, various combinations of uncertainty (i.e., precision, bias etc.) affect the attainment of the data quality objectives. The CFR would be revised to identify the uncertainties that needed to be measured

as well as the confidence one wanted in the estimate of those uncertainties. The SLTs would then be responsible for developing a quality system that would measure, assess and control these uncertainties. Therefore, the SLTs would determine how frequently they needed to perform various QC checks and what the appropriate acceptance criteria should be. OAQPS, using the data in AQS, will also assess data uncertainty to determine if an SLT has developed a quality system that was "in control". For organizations with less QA resources or experience, the QA Handbook will continue to provide the suggested acceptance criteria and QC sample frequencies through the use of the validation templates.

It is strongly suggested that SLTs invest in cutting edge data logging and automated quality control and assessment technology. This technology would allow for more frequent QC checks while reducing man-power burdens of site visits and allow monitoring personnel more opportunity for data verification, reduction and assessments.

7.3.3 Data Validation/Verification

Verification and validation are processes used to ensure that specified requirements (i.e., collocated sampling) have been fulfilled and that particular requirements for a specified use (i.e., collocated precision acceptable for NAAQS comparison) have been fulfilled. Improvements and activities to be implemented in this area include:

a. Development of validation templates. Since the development of the $PM_{2.5}$ Validation Template, there has been an interest in developing similar templates for all criteria pollutants. The QA Strategy Workgroup is nearing completion on validation templates for the remaining criteria pollutants which will be incorporated into the next version of the QA Handbook. Following the PBMS paradigm, use of the template will not be considered mandatory, but will provide useful guidance for organizations developing QAPPs. OAQPS proposes to develop similar templates for other NCore Level 2 measurements. Other implementation activities in this area include:

b. Providing more automated requirements for data review/verification/ validation. It is recommended that an initial capital expenditure of information capture and transfer technologies (e.g., data loggers, telemetry, automated quality control) for automatic transfer of routine and quality control information to central facilities be considered. Included in this would be quality control systems for automating various QC checks, such as zero/span checks, or bi-weekly precision checks. This includes the use of various automated data evaluation processes to provide for more real-time consistent screening and data verification/validation activities. Real-time data transfer technology would allow personnel at centralized offices to implement various verification/validation techniques, identify problems, and take corrective actions in a more real-time mode.

7.3.4 Data Certification and Quicker Data Access on AQS

Due to the more recent emphasis on real-time reporting of data, the real-time review/verification/validation of data has become equally important. Because of more timely

data assimilation, the current process of certifying a calendar year's worth of data six months after the end of the previous calendar year must be improved. A majority of data verification/validation efforts have already been automated in some SLTs. Data quality assessments would have more value if data was reported sooner, and accordingly, would require earlier certification of data. A number of recommendations on this topic include:

- **Providing for quarterly certifications-** Instead of waiting six months from the end of the calendar year, provide a mechanism for certification on a quarterly basis.

- **Certified/uncertified data flagging** - Data qualifiers are not used for the majority of the criteria pollutants, meaning that SLT personnel wait for data to be validated before uploading to AQS. Since many SLTs use data qualifiers on their local sites to inform data users that the real time data is not validated, AQS data could be initially uploaded as "unqualified" and on a quarterly basis, after validation, have this qualifier removed. This would allow OAQPS to develop generic data evaluation/validation reports on AQS that could be used or modified by the AQS user community, rather than having SLTs develop their own reports.

- **Developing QA/QC evaluation reports** – Opportunities exist to reduce the burden on data validation personnel through the development and generation of various validation/evaluation program reports.

7.4 Assessment And Reporting

The following activities will describe the various assessment and reporting features of the quality system.

7.4.1 Site Characterizations

Site characterizations are a type of audit to assess that samplers or monitors at the monitoring site meet the applicable siting criteria for existing NCore Level 2 and 3 objectives. Siting criteria have been described for SLAMS, NAMS and PAMS sites in 40 CFR Part 58 Appendix E. Siting criteria for NCore Level 2 sites need to be addressed. The on-site visit consists of the physical measurements and observations such as: height above ground level, proper spacing from various instruments, or distance from obstructions and roads. It is recommended that all NCore Level 2 sites undergo complete site characterizations at the start of the program and/or at start of site implementation to ensure that the sites are appropriately characterized from the start. As part of the technical systems audit function, on a three year basis, the EPA Regions should confirm the site information for all NCore Level 2 and 3 sites. It is also possible during NPEP audits that certain aspects of the site characterizations can be performed by Environmental Services Assistance Team (ESAT) personnel. This would allow for more frequent update and confirmation of site characteristics.

Recommendations and action items for site characterization that would apply to NCore include:

- **Setting minimal levels and tracking** - The requirements for the frequency of such characterization would be changed, if necessary. In addition, better tracking of this information would ensure adequate site characterizations are being performed. AQS has an area that can be revised for this tracking activity.

- **Ensuring updates made in AQS** - Information from inspections of monitors, sampling equipment added to site, latitude/longitude changes etc. can be described in the AQS tracking area mentioned above. Once changes are confirmed, this information could be deleted.

- **Developing and using a site characterization form**- A site characterization form and possibly software could be developed and distributed to provide some consistency in performing site characterizations.

- **Speeding up approvals for discontinued sites**- SLTs submit paperwork for discontinuing sites, but EPA approvals often take a considerable length of time. OAQPS will review this process and determine how to expedite the approval process.

7.4.2 Performance Evaluations

Performance evaluations (PE) are a type of audit in which the quantitative data generated in a measurement system are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory. The types of audits that will be implemented by OAQPS are the NPEP and the Certification Programs described below:

- **The National Performance Evaluation Program (NPEP) -** The NPEP program will service NCore Level 2 and 3 sites**.** The following PE programs will be included under the NPEP:

- **$PM_{2.5}$ Performance Evaluation Program (PEP)** - This program has been operating since CY 1999 using the ESAT contractors to collocate FRM $PM_{2.5}$ instruments at 25% of a reporting organizations sites. In addition, during $PM_{2.5}$ audits, EPA will audit speciation monitors at both Speciation Trands sites as well as supplemental sites. It is anticipated that this would cost approximately $150,000 per year.

- **National Performance Audit Program (NPAP)** - This program, initially a mailable audit program, has been operating since 1970. It is currently being retooled into a through-the-probe audit system implemented by EPA Regional personnel and/or ESAT personnel currently implementing the PEP. OAQPS has expended internal capital for the outfitting of five trailers and one vehicle. By

FY05 the PEP and NPAP programs will be combined into a single program. In addition, in FY04 OAQPS will start evaluating the need for through-the-probe auditing in the National Toxics Trends Program (NATTS) and start outfitting the NPEP laboratories for this activity in FY05.

- **NATTS proficiency tests samples**- OAQPS will contract the development and distribution of audit samples quarterly to the laboratories analyzing NATTS samples. Details on these audits can be found in the NATTS Strategy document.

- **Certification programs**- Certification programs provide some independent testing of products and or instrumentation and are used to provide a sense of quality and comparability. The following certification programs (with the exception of protocol gas) will be implemented for NCoreLevel 2 and 3 sites.

- **Standard Reference Photometer Program (SRP)-** The Standard Reference Photometer which is used to certify SLT monitoring organizations ozone primary and transfer standards will continue to be implemented through the Office of Radiation and Indoor Air (ORIA). Within the last year the SRPs have been updated and it is anticipated that Standard Operating Procedures will be revised in calendar year 2004.

- **PAMS and NATTS gas cylinder certifications–** Currently ORIA performs gas cylinder certifications for the PAMS program. ORIA is proposing a similar service for certifying calibration standards for laboratories participating in the NATTS. Details on these audits can be found in the NATTS Strategy document.

- **Re-investing in the protocol gas program** - For many years ORD implemented a program that tested gas standards supplied by gas manufacturers to monitoring organizations. The program provided some level of quality control over the gas manufacturers. This program was discontinued in 1997 as part of the ORD divestment. Recently, some gas manufacturing vendors, due to market in-roads by smaller vendors with potentially inferior quality products, have expressed an interest resurrecting the program. A pilot test of this program occurred in FY03. Results will be available in FY04 with decisions made later in the year on whether or not we can implement a program, and if so where resources would be acquired.

7.4.3 Assessments of Quality Systems and Technical Systems Audits.

Two types of qualitative assessments will be implemented of the Ambient Air Monitoring Program: assessments of quality systems, and technical systems audits.

a. Assessments of quality systems. These assessments are a systematic, independent, and documented examination that use specified criteria to review an organization's quality

system, mainly through the assessment of an organization's adherence to their quality management plan. Assessments of quality systems will be performed by the EPA Quality Staff on OAQPS once every three years and OAQPS will perform this assessment on the EPA Regions once every three years. As part of the technical systems audits described below, the EPA Regions will perform an assessment of quality systems of the SLTs. This process should provide feedback at all levels of the organization on strengths and weaknesses in the Ambient Air Monitoring Program quality system.

b. Technical Systems Audit (TSA). TSA is a thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management and reporting aspects of a system. EPA will continue to require TSA of reporting organizations once every three years. The TSA audit checklist, currently in the QA Handbook, will be revised to reflect new monitoring methods and or objectives and questions relative to an organizations quality management plan. An area for tracking audits will be developed on AQS.

7.4.4 Data Quality Assessments.

A data quality assessment (DQA) is a statistical evaluation of a data set to establish the extent to which it meets user-defined application requirements (e.g., DQOs). Historically, DQAs have received little attention in the ambient air monitoring community. With a move towards performance-based measurements systems and DQOs, there will be more emphasis on DQAs. OAQPS will be responsible for the development of DQAs for all objectives in which OAQPS has developed DQOs (NCore Levels 2 and 3). DQAs will be performed at the same frequency in which the priority decision is made. As an example, $PM_{2.5}$ NAAQS comparisons are made with an aggregation of three years of data; DQAs for $PM_{2.5}$ data would be performed at the same interval.

a. Developing DQA tools. Similar to the $PM_{2.5}$ DQO software that is being modified as a DQA tool, as DQO development on the other criteria pollutants move forward, DQA tools will also be made available. It is anticipated that these tools would be integrated with AQS.

7.4.5 QA Reports

QA reports provide a means for distributing information on the Ambient Air Monitoring Program Quality System. Two general types of reports will be developed at the Federal level.

a. Annual assessments of data quality indicators. OAQPS will provide automated reports on AMTIC or through AQS that would provide assessments of the data quality indicators (e.g. precision, accuracy, bias, completeness) that are reported to AQS. A report for the automated gaseous pollutants is currently being developed and would be used as an example for this type of report. SLTs will be able to comment on this report in order to improve its usefulness.

b. Interpretive reports. Following the discussion in the data quality assessment section above, interpretive QA reports will be developed at the same time frame as DQA and will provide a more thorough discussion on the quality system. DQA results would be included in these interpretive QA Reports.

7.5 Funding/Resource Issues

The timeframe that is anticipated for full implementation of NCore Level 2 and 3 monitoring will dictate the resources needed on a year to year basis to implement the QA activities at Headquarters/EPA Regions/SLTs. In order to ensure that expectations are met, it is imperative that an adequate estimate of the resources needed to implement this quality system at all three levels are enumerated, acknowledged as appropriate, and where not, either rectified or have expectations reduced. As an example, current funding levels for OAQPS QA activities will not cover some of the suggested activities described in this section In addition, QA activities need to be intimately tied to the monitoring process so that costs for the quality system increase/decrease commensurately with monitoring costs. Resource and funding related action items include:

- **Providing a reasonable estimate of the "cost of QA"** - Identify quality system elements for a "typical" SLT monitoring organization and provide an estimate of the costs of an adequate quality system. Use these estimates to provide a percentage of monitoring costs that should be allocated to the implementation of a quality system. The QA Strategy Workgroup developed a questionnaire that could be distributed to SLTs in order to get a reasonable handle on these costs. Similar procedures could be developed for EPA Regions and Headquarters.

- **Ensuring SLT funds are available for QA training** – EPA provides regular and continuing training on many aspects of air programs. It is important to include QA training as part of the overall training program.

- **Automating quality control procedures** -There are a number of implementation activities that are still being performed manually by some monitoring organizations (i.e., zero/span and precision checks) that can be automated. The technology section addresses the aspects of increasing awareness of this technology and moving to more automated systems. However, an initial expenditure of capital for both equipment and training will be required to ensure the achievement of this modernization.

- **Providing contractual support** – OAQPS will provide a mechanism to allow SLTs to tap into statistical expertise for development of data quality objectives, data quality assessments, and other statistically-related assessments.

- **Applying STAG resources for NPEP** - STAG resources should be used to cover the NPEP program. STAG funds currently pay for the $PM_{2.5}$ PEP and NATTS Proficiency Test Program but not the traditional NPAP program that is currently

being re-invented to a through-the-probe audit process. Quality assurance is especially critical as new monitoring approaches are undertaken in NCore. Accordingly, as indicated in Table 7-3, the national performance evaluations QA component should be managed as a combined entity and it is recommended to increase STAG funds by $1.3 million to cover the $600,000 currently being funded by EPA, $500,000 to outfit the through the probe audit trailers to administer field audits for the NATTS program and $200,000 for audits of speciation monitors. These funds would cover all national QA costs for performance evaluations audits of NCore Level 2 measurements and NAAQS measurements at NCore Level 3 sites.

Table 7-3. Proposed Summary of Resources for Performance Evaluation Programs (in millions of dollars)

Program	**Current**		**Proposed**	**Comments**
	STAG	EPA	STAG	
PM2.5 PEP/Speciation	1.9		2.1	Continuance of the Performance Evaluation Program with the inclusion of speciation site audits
NATTS	0.4		0.4	Field and lab audit, proficiency tests (4/year/lab), and QA Reports
NPEP (criteria)	0	0.6	0.6	Through the probe audit program
NPEP (Toxics)	0	0	0.5	Initially outfitting through the probe laboratories with capital equipment to perform audits of Toxics
Total	2.3	0.6	3.6	

7.6 Next Steps

The recommendations of the Workgroup are based on a concerted effort to identify, prioritize, and take action on the many aspects of the quality assurance program, so that changes are consistent with the overall Strategy's holistic review of air monitoring networks. To that end, the recommendations presented here should be considered preliminary, in that the Workgroup will be continuing its efforts through for the next few years as the Strategy enters its implementation phase and our ideas and recommendations are tested. Continuing Workgroup participation by the monitoring organizations will help to assure a timely level of progress and provide an invaluable level of reality. On a periodic basis, the progress will be reported to the NMSC as well as identify where revisions to this QA strategy are needed.